SECOND SERIES. No. 36.

SEPTEMBER, MDCCCLXVIII.

THE ZOOLOGIST:

A Monthly Journal

OF

NATURAL HISTORY,

FOR

RECORDING FACTS AND ANECDOTES

RELATING TO

QUADRUPEDS, BIRDS, REPTILES, FISHES AND INSECTS.

No. CCCXXVII. or S.S. No. 36.

LONDON:
JOHN VAN VOORST, PATERNOSTER ROW.

Price ONE SHILLING.

s

A

i

w

n

The Death of Species. By EDWARD NEWMAN.

"Je ne change qu'en mourant."

I WAS taught, and from my earliest years accepted the teaching, that every living being was created perfect of its kind; and this view I maintained with unwavering faith until the appearance of Mr. Darwin's 'Origin of Species,' when a second view, entirely antagonistic to the first, was presented to my mind, since this distinguished and most accomplished naturalist contends, and attempts to prove, that the present status of Species results from innumerable infinitessimal improvements accumulated during countless ages that have past. Now while I admire more than I can express, the research and candour of the author, I fail entirely to perceive the logic of his conclusions; and I revert, as it were of necessity, to the teachings received in my childhood, not only fully believing in the original perfection of species, but also that the tendency of a prolonged existence is rather to deteriorate than to improve. A species like an individual appears to me to have an allotted term of life, which under very favourable circumstances may be prolonged; but I also believe that decay is the necessary concomitant of the prolongation, and death the inevitable issue.

Seeing that Mr. Darwin has, in his very title, employed the word "Species," it seems as though I had no choice but to adopt it when expressing opinions on his labours, or in connection with his labours; and seeing also that some diversity may exist in the interpretation of that term, I may perhaps be excused if I say a few words in explanation, at least so far as giving it my own interpretation. It would perhaps be easier to shirk the question, "What is a species?" on account of the difficulty of finding a reply, but it were more honest to look the difficulty, if it be one, full in the face, and give such explanation as I can. I conceive, then, a "species" to be composed of such living individual beings as possess perfect eugenism among themselves; that is, of individuals any pair of which can reproduce their kind, the descendants being equally prolific; and I conceive also that all structural characters, whether of form, size or colour, are insufficient to the differentiation of species; not useless, but insufficient. As an example, our domestic dogs and pigeons may vary almost infinitely in their structural characters, but no naturalist has ever ventured to raise such varieties to the rank of species. Nothing is more common in Entomology than for a species of insect to pass

BRITISH MUSEUM

through two generations in a year, and for the two generations to differ entirely in coloration and size: in every instance where this is the case, entomologists have treated the vernal and autumnal generations as species: it is scarcely needful to say that they are not so.

It is well known that the duration of individual life varies in different species; thus some insects pass through four or five generations in a year, although the usual term of life is twelve months: rabbits live four or five years, cats six or eight, dogs ten or twelve, horses sixteen or eighteen, and ravens and tortoises are said to live for centuries. This diversity in the term of years allotted to individual life has no ascertained relation to that allotted to the life of the species of which that individual forms an integral part: on this subject there are no statistics: the death of a species is an unobtrusive event, while that of an individual, whether an emperor or a fly, is an event that frequently forces itself on our notice: so that neither the brevity nor prolongation of individual life affords us any clew to the duration of specific life.

How then do we acquire a knowledge of the death of species? *first*, from the testimony of the rocks; *secondly*, from beholding with our own eyes the partial death of species; in other words, their extinction in certain limited localities; *thirdly*, from historic evidence.

Rocks contain the monuments of countless thousands of species: our lists of fossils (so called) are obituaries of species; but our knowledge of them being imperfect, they serve rather to excite than to satisfy our curiosity respecting the inhabitants of that vast cemetery of species, the superficial covering or crust of the earth. History has erected tombstones over a few; and imagination, hypothesis, theory,—call it what you will,—is even now preparing other tombstones not yet required, carving prospective epitaphs for species about to die. A great deal is said and written against the prevalent practice of promulgating prophetic dicta in physical science, but certain coming events cast such unmistakable shadows, or, more properly speaking, project such a blaze of light before them, that the general character of the future stands revealed. Those who have studied earth's inhabitants, with or without the assistance of Geology, have acquired a very fair insight into the future, and are gradually led to perceive, accept, and even enunciate results; yes, to enunciate them with a confidence which the dissentients call "dogmatism," the cavillers "hypothesis," the ingenuous "theory," and the approvers "logical deduction." Taking refuge under this diversity of sentiment, and certain that no expression of opinion can jeopardise the truth, I venture to predict that the future will be simply a continuation of the past, an inevitable sequel to the present.

Races of men and animals are in constant antagonism, and one race of men, that which philosophers have called Caucasian, is continually pressing forwards towards the sole sovereignty of the earth: we still behold other vast races of men like the Chinese; races of huge beasts like the elephant; races of gigantic birds like the ostrich; in undisturbed possession of their original allotment of earth's surface; their peace, prosperity and power never apparently jeopardized, although sometimes interrupted by domestic jars; but history reveals so many gaps that have occurred by the extinction of races through the instrumentality of the Caucasian, that we feel certain such gaps will continually recur: we may accustom ourselves to look so deep into futurity, illuminated only by the light of past and passing events, that we cannot fail to prophecy that one favoured race of men is slowly but assuredly becoming sole master and occupant of the earth.

But the Caucasian in his onward course is not alone; as he moves forward he attracts or creates a fauna and flora of his own. The negro; the dog, the cat, the horse, the cow, the sheep, the pig; the turkey, the goose, the barn-door fowl; the honey bee; these are his companions, whether to serve him as slaves or for food: wheat, barley, peas and beans spring up beneath his feet. He bids fair to exterminate all that does not administer to his wants or his pleasures—in a word, to his will. Every other man will be his slave, every animal will be a domesticated animal. The only exceptions will occur in the rat, mouse, sparrow, cockroach, cricket, bug, flea, dock, thistles, and such other voluntary companions as are dependent on his bounty, however grudgingly bestowed.

The foot-prints of such a future are perpetually intruding themselves on the present. No one who gives his attention to the subject for a single hour can doubt that the change is progressing. It is clearly written on the earth's surface, marked as plainly as the hours and minutes on the dial-plate of a clock. Entire continents and islands, America, Australia, Tasmania, are changing their men and animals: even now the boundless plains of the Pampas resound with the hoofs of ten thousand horses, although a few years back a horse was as unknown as a phœnix: even now English weeds grow in the streets of Sydney, Melbourne and Adelaide; even now a hundred plants grow wild in Philadelphia that are alien to the soil. Even now the once dominant inhabitants of the land exist only as a source of innocent amusement to the missionary, the philanthropist, the ethnologist, and the speculative naturalist: in Tasmania, the hotbed of missionary enterprise, the original master only occupies a seat below its surface. In a hundred instances the white man has rudely pushed aside and trampled down the former lords of the soil, and, taking possession of the seats they once occupied, gazes with philosophical curiosity on their approaching extermination. A glance at the animal kingdom will at once place this subject clearly before my readers, and will show that neither bulk nor strength, ferocity nor numbers, can avail against the favoured race of man: indeed it would seem that these attributes are antagonistic rather than conducive to the prolonged life of a species.

The partial or geographical death of a species, to which I have already alluded, gives us a kind of clew to the date of its final disappearance. In selecting a country in which to ascertain the precise date of the death of a species these islands have the great disadvantage of a very limited area; but this perhaps is compensated by their more accessible records. The records, however, are only incidental, and are invariably made without any reference to their bearing on scientific questions; indeed, there is every reason to suppose that had these facts any other object than the favourite pastimes of kings and princes who could neither read nor write, no records would ever have been preserved. Of the species formerly abundant, but now dead as regards the British Islands, the most familiar are the bear, the beaver, the pig and the wolf.

1. The BEAR as a British species died about 1041. In what is now called London, namely the districts of Southwark, Lambeth, Battersea, Westminster, Fleet, Hackney, Woodford, Plaistow, Stratford, Isle of Dogs, Greenwich, Peckham and Camberwell, bears were so numerous at the period of the Roman invasion that hunting-parties were systematically organized and armed, to diminish their numbers, and thus in some degree abate the nuisance: to compass their destruction was out of the question: nor perhaps was it altogether desired, for we may imagine that the preservation of bears, although a loss to the many, may have been a source of profit to the few, since we find that about the year 850 the Emperor Claudius imported vast numbers of British bears as a source of gratification to his subjects; they were large, strong and ferocious, and were highly prized for their prowess in the arena. Seven hundred years later, bears are incidentally mentioned as infesting English forests in great numbers; but no mention is made of

London, where they had probably been thinned. In 1035, and probably earlier and later, the city of Norwich was compelled to supply annually to Edward the Confessor, "one bear, together with six dogs to bait the bear;" a record from which three inferences may be fairly drawn; *first*, that bears were procurable at Norwich in 1035; *secondly*, that the eminently sainted monarch, Edward the Confessor, possessed and indulged a regal taste for bear-baiting; and *thirdly*, that but for the indulgence of this taste we should have been left uninformed on this interesting subject. The Norwich bear was furnished to the pious monarch in 1041, but I know of no subsequent record.

2. The **BEAVER** as a British species died in 1188. The beaver was formerly an inhabitant of Wales and Scotland, and its skin was always valuable as an article of commerce. The last record of its existence will be found in the Itinerary of Giraldus Cambrensis, who travelled in Wales in 1188: he states that the river Teivy, in Caernarvonshire, was the only river it then inhabited. The beaver may have existed here for another century, but we have no later records; a few colonies of this curious creature are still found on the banks of the Weser, the Rhone and the Danube.

3. The **PIG** as a British species died before 1625. Formerly the lordly pig was the favourite object of chase with our British monarchs, and was protected by the most sanguinary laws, the last of which, I believe, is that dated 1087, during the reign of the Conqueror. Amongst other provisions, this law decrees that "any man killing a wild boar should have his eyes put out." Notwithstanding this truly regal provision for the preservation of pigs, they had become extinct before the accession of Charles I., and we find that canonized monarch turning out domestic grunters in the New Forest, in the hope they would turn into wild boars. Vain are the ambitious aspirations even of princes: when the royal cavalcade arrived, the swine could not be persuaded to run, but continued munching acorns under the forest oaks, and would not deign to notice the august company associated to compass their destruction.

4. The **WOLF** as a British species died about 1678, as an Irish species about 1710. The wolf in the earlier period of English history was a terrific scourge. The struggle for existence between the wolf and Kelt was constant, and soon after the invasion of the island by continental legions both wolf and Kelt were driven to its extremities, Cornwall, Wales and Scotland. In Scotland the wolf obtained the ascendancy, and indeed became

absolute master of the position. In 1281 wolves had become so numerous and so formidable that the Kelt was compelled to hide his head entirely by night, and crept about by day in fear and trembling. We learn from Hollingshed that in 1577, three hundred years later, and after Saxon blood had been infused into Scotland, that the wolf was still troublesome, and subsequent history shows that the last wolf was slain in Scotland by Sir Evan Cameron in 1678. In Ireland he continued still longer a terror and devastating plague to the Kelt. It is very familiar to readers of history that Ireland was never completely conquered by the Caucasian; the feeble Kelt, the rightful owner of the soil, was never thoroughly extirpated as he has been in England; the Saxon crossed the Channel, having his own ends in view, and found two occupants equally opposed to him. Considerations, whether political, moral or religious, we need not consider, induced him to spare the Kelt, but the wolf enjoyed no such immunity. To the Kelt the wolf had been a terror and held in abject dread; to the Saxon he was simply a nuisance, and so was destroyed. Nevertheless, owing to the numerical preponderance of the Kelt, the task of destruction was very gradual, and the wolf held his own much longer than in Scotland, where the native, with a shrewd eye to self-interest, amalgamated with the Saxon, and availed himself of that powerful arm. It was not until the beginning of the eighteenth century that the wolf was exterminated in Ireland.

Of these four animals, two were important from their destructive powers, one from its value as human food, and one from its mercantile value in human clothing; yet they have so totally vanished that few amongst us have ever regarded them but as the inhabitants of other climes. They perished immediately they were brought into close contact with the favoured race of man; and this is no more than an indication of the future: wherever the Saxon shall come into close contact with the bear, the beaver, the wild boar or the wolf, these beasts will inevitably perish: on the continent of Europe they are for the moment protected only by the expanse of territory. It may here also be mentioned that the king of beasts, the lion himself, was once an inhabitant of Europe, although now exclusively Asiatic or African.

Let us now turn back to another page in the records of the past. Authentic history not only takes abundant cognizance of, but gives us every desired detail respecting species that are now absolutely dead. The few examples of which I have collected and arranged obituary notices are no longer confined to the limited area of the British islands: they are derived from widely-separated localities; Ireland, England, Mauritius, Rodriguez, New Zealand, Bourbon, Behring's Straits, Newfoundland and Phillip Island.

1. The IRISH ELK died about the year 1070. The Irish elk is a misnomer: this gigantic deer was one of the platycerine division of the genus Cervus, and had little to do with the elk, as we now understand that animal. In the Preface to the 'Zoologist' for 1846 will be found a tolerably complete history of this remarkable animal: from this it appears that the females were killed as food for man by the blow of a pole-axe in the forehead, just as our butchers kill bullocks at the present day; there is, moreover, sufficient evidence of the females being domesticated and milked as our milch kine; they are also supposed to have been used as beasts of burthen. There is no evidence of the males being slaughtered. The bones are found in the greatest abundance in the Irish bogs, and are so recent, or so well preserved, by the antiseptic properties of the peat, that very tolerable soup has been made from them, and the marrow has been found to blaze like a candle. This enormous deer stood at least seven feet high at the shoulder; and the horns extended more than eleven feet from tip to tip: he probably became extinct at the period of the Roman invasion, but we are without the slightest evidence as to the people that destroyed so noble an animal. We have evidence of departed men far superior to the Kelt, but we scarcely know how to designate them: it is more than probable that the half-mythical race who built the round towers were also the destroyers of the Irish deer. It is, however, in vain we speculate whether foreign invaders or native bears and wolves, had this task of destruction assigned to them. Kelts were unequal to the task, and Saxons had not landed.

2. WILD CATTLE as a species died about the year 70. Enormous wild cattle, described by some authors as "boves sylvestres," and by Cæsar as "Uri," infested London at the period of the Roman invasion, indeed five distinct wild species of the genus Taurus then inhabited Europe. Every child will recollect the story of Guy Earl of Warwick and the dun cow: there is not the slightest reason for believing the story a romance. In a Swedish museum and in the British Museum are skulls of this great bull (*Bos primigenius* of Owen) that indicate a beast at least twelve feet long and high in proportion; indeed such an animal as would abundantly answer the description of the Uri of Hercynian forests given by Cæsar in the following words:—"These Uri are little

inferior to elephants in size, but are bulls in their nature, colour and figure, nor do they spare man or beast when once they have caught sight of him. These, when trapped in pitfalls, the hunters unsparingly kill. The youths, exercising themselves by this sort of hunting, are hardened by the toil, and those among them who have killed most, bringing with them the horns as testimonials, are given great praise. But these Uri cannot be habituated to man, nor made tractable, not even when taken young. The great size of the horns as well as the form and quality of them differ much from those of our oxen."* Now there is something extremely interesting in watching a methodical comparative anatomist like Nilsson or Owen as he constructs a ruminant of this enormous size from bones that have been discovered, and then finds the creature of his skill tally exactly with an unquestionable description from the life penned 1800 years previously.

I am obliged to omit many species whose deaths succeeded that of the Urus, and pass on to the date when modern Natural History may be said to commence; for between the date of Cæsar and the narratives of the early Dutch voyagers we have really no reliable accounts of animals. But directly these early navigators commenced their career the evidence is clear and decisive.

3. The DODO, a species that died about 1638. The dodo was a bulky bird with a hooked beak, a bald head, very small wings and very stout legs, that inhabited the island of Mauritius, where it was discovered by Jacob von Neck, in 1598. In 1638 a living specimen was exhibited in London, and a stuffed specimen, in all probability the skin of the same bird, was examined by three eminent naturalists,—Tradescant in 1656; Willughby and Lloyd in 1684; and by a Mr. Hyde in 1700: this invaluable relic of a dead species passed into the possession of Oxford University, and with the exception of the head and feet, now in the British Museum, was destroyed by order of the authorities in 1755. We have no subsequent account of the living bird, but abundance of its bones have been found in the island where it was first discovered.

4. The SOLITARY, a species of bird that died about 1700. The solitary or solitaire (*Pezophaps solitarius*) was an apterous bird discovered in 1691 by Francis Leguat in the Island of Rodiguez: it was described with the utmost minuteness in the account of Leguat's voyages published in English in 1708, and in French in 1720; but

---

* The translation is quoted from Gosse, 'Romance of Natural History,' ii. 64.

there appears to have been an earlier French edition, since that dated 1720 is the second. The species was probably entirely destroyed about the year 1700.

5. PALAPTERYX. Two enormous species of this genus of apterous birds existed in New Zealand formerly, and probably up to the middle of the last century: nothing is known of them beyond Professor Owen's admirable description of their bones, which are in a state of excellent preservation.

6. The BLUE BIRD. The *oiseau bleu* of French voyagers (*Porphyriopsis cyaneus*), a bird as large as a goose and entirely of a blue colour, was discovered on the Isle of Bourbon when visited by M. de la Haye about 1658: its beak and feet are described as having been bright red. This was probably a bird of the rail tribe, and perhaps allied to Notornis Mantellii. It was certainly in existence in 1735; and there is presumptive evidence that it survived as lately as 1763.

7. The RYTINA or STELLERIA (*Rytina Stelleri*) has a historical existence of only about twenty-seven years. This species was discovered in 1741 and died in 1768. There are many reasons for believing this may have been the mermaid of which so many circumstantial accounts have reached us from the northern seas. We have its complete history from the pen of Steller, a Russian naturalist. It was an enormous marine animal having a general superficial resemblance to a seal, and inhabited in great numbers Behring's Straits and the neighbouring seas. Its head was not separated from its body by any distinct neck; it had small eyes, and no external ears beyond a small opening on each side of the head; it had a thick and white moustache several inches long on the upper lip; its food was seaweed, which it tore from the rocks with its thick lips, which somewhat resembled those of a cow; it possessed but four teeth, all of them molar, one of them on each side of each jaw and occupying its entire surface; these great teeth had a flat crown composed of enamel disposed in transverse ridges as in the elephant. The females had very prominent breasts shaped like those of a woman, and placed between the arm-like flappers or fins, with which she clasped or hugged her young. These creatures generally swam with the body half out of the water, and often in an erect position. The length was twenty-five feet and upwards, the girth twenty feet and upwards, and the weight four tons and upwards. They were most lethargic and inoffensive creatures, and being highly prized as food for men were slain without mercy. Every ship that visited these seas supplied itself with their

flesh, and as they made no kind of resistance they really seemed to exist for no other purpose than to be killed and eaten: the last specimen of which we have any record was slaughtered in 1768.

8. The MOA (*Dinornis*) died about 1800. Moa is the name given by naturalists to certain very large birds which up to a comparatively late date inhabited New Zealand, but there is grave doubt whether the word in the native language had any such restricted application. Professor Owen, to whom we are indebted for clearly establishing five species of this bird, some of which possessed a frame as large as that of an English dray-horse, derives his characters entirely from the bones, no example of the living bird having yet been seen; but the remains of a specimen recently exhibited at a meeting of the Linnean Society by Mr. Allis, of York, still retained portions of skin, feathers and hair, which had undergone no change: some of those scientific men to whom Mr. Allis's observations were addressed, thought the bird had been living within ten years; others extended the period to fifty years; but we cannot with any show of probability date its extinction earlier than the year 1800.

9. The GREAT AUK (*Alca impennis*) died in 1848. This penguin of the arctic regions (garefowl, auk, or great auk of ornithologists) was an inhabitant of the arctic seas. It was a bird as large as a goose, but totally incapable of flight, the wings having the appearance and office of fins, and were used entirely in subaqueous progression. It was formerly most abundant, and formed so favourite an article of food with sailors that hundreds of ships from England, France, Spain, Holland and Portugal, visited the coasts of Iceland, Faroe and Newfoundland, during the sixteenth and seventeenth centuries, purposely to provision their crews with the bodies and eggs of these penguins: in addition to the supply required for immediate consumption, tons upon tons of the bodies were salted for future use. One of the old voyagers asserts that so easy was it to catch and destroy these helpless creatures that in the space of a single hour thirty boat-loads of their bodies could be obtained. Being unable to fly, or if on land to run, the only mode the penguin had of escape was by swimming or diving. The last of the species was killed in 1848.

10. The MOHO died in 1850. The moho (*Notornis Mantellii*) was a large and beautiful bird of the rail tribe that formerly inhabited New Zealand in profusion: its bones have been found in exactly the same state as those of the different species of moa, and its characters, excepting the colour of the plumage, were accurately described by

Professor Owen, so that when a single specimen was caught, killed and brought to England in 1850, it was at once recognized. The specimen was exhibited at a meeting of the Zoological Society in 1851, and this is assumed to have been the last of its race.

11. The NESTOR PARROT (*Nestor productus*) died in 1853. This bird lived and died on a small island called Phillip Island, which is about four miles from Norfolk Island, and both are situated to the east of Australia and to the north of New Zealand. Phillip Island is only four miles in length, yet the species of Nestor, and there were several, were confined to this little spot of land. The appearance of these birds was very remarkable, the upper mandible of the beak being twice as long as the lower and sickle-shaped: they were not only ardently sought by naturalists as curiosities for preservation in European museums, but, being remarkably quiet and docile birds, were caught and caged; and one of the species was taught to speak with great facility. Like most other parrots they ate in confinement all kind of vegetable substances, bread, potatoes, lettuces and cabbage; their food in a wild state is not so easily defined: some authors assert they lived on roots, which they dug out of the earth with their long pickaxe-like beaks; others state that they fed on the honey contained in the nectary of a white-flowered Hibiscus, and that the tongue is provided with a horny scoop on the under side near its extremity, for the purpose of extracting the nectar. Mr. Strange, writing to Mr. Gurney on the 7th of December, 1853, announces the destruction of the last Nestor: "I have seen the man who exterminated the Nestor productus from Phillip Island, he having shot the last of that species: he informs me that they rarely made use of their wings except when closely pressed: their mode of progression was by the upper mandible; and whenever he went to the island to shoot he invariably found them, all except one, on the ground, and that one used to stand sentry on one of the lower branches of the Araucaria excelsa, and, the instant any person landed, the rest would run to these trees and haul themselves up by the beak, and as a matter of course there remain until they were shot or the intruder had left the island."

This list might be extended to almost any extent: I have selected the species that are remarkable for their great size, their almost infinite numbers of individuals, or their remarkable figure: all of them were species of note, attracting the attention of the most unobservant.

All of them fell by the hand of man, and following out the theory already suggested, believing that the future is merely a continuation of the past, we cannot fail to see that hundreds of species now tottering over their graves will ere long cease from the earth, and their place will know them no more: let me enumerate a few.

1. The **BISON** or **AUROCHS** (*Bison europæus*), a huge bovine formerly as abundant as the Urus of Cæsar in every part of the European continent, is now restricted to some half-dozen herds in the forests of Lithuania.

2. The **EMEU** (*Dromaius irroratus*) inhabits the interior of Australia, and used formerly to be most abundant, and was always sought with avidity by the native Australian, who laid in wait to strike him with a spear; but since the white man has planted his foot in that new world, and has pursued the emeu with dog and gun, it has decreased so rapidly that before many years it must be exterminated: it owes its present existence to the difficulty and danger which attend penetrating to the interior.

3. The **CASSOWARY** (*Casuarius galeatus*) is a native of the Eastern Archipelago, and has been found in the islands of Banda, Ceram, Sumatra and Java: it is remarkable for its large size, great strength, and fierce resolute disposition, qualities which almost ensure its speedy extinction: so large a bird, perhaps the largest with the exception of the ostrich, cannot coexist with the enterprising Caucasian.

4. The **MOURUK** (*Casuarius Bennettii*) is another bird of the same family, but scarcely so large in size. I believe it has only been found in the small island of New Britain, to the north of New Guinea: it seems to be readily domesticated, but to possess none of those qualities which might induce the Caucasian to protect and preserve it; it must therefore perish before many generations have passed.

The three species of kiwi kiwi (*Apteryx*), the manumea (*Didunculus*), the kakapo (*Strigops habroptilus*), the aratoo (*Microglossum*), the hawk parrot (*Dasyptilus Pesquetii*), and the vast family of kangaroos, containing a hundred species and myriads of individuals, are all exhibiting so rapid a numerical decadence, without the slightest probability, I might almost say possibility, of its being arrested, that I can only be surprised the fact has not more forcibly attracted the attention of our philosophic naturalists.

Nevertheless the examples I have given of large species expired, expiring, or apparently doomed to expire, before many generations have passed away, are numerically insignificant when compared with the multitude of insect races that are gradually disappearing from the surface of the earth. Every writer on geographical Zoology contributes his quota of information on this deeply interesting subject, although in no instance, so far as my reading has extended, has the knowledge of this fact been rendered available for advancing a comprehensive theory. I will quote only one: Mr. Wollaston, after speaking of a group of insects which infest the Euphorbiæ of the Atlantic Archipelago, and describing them as "without a parallel, both as regards the number of the individuals by which they are severally represented and the greater or less eccentricity of their structure," goes on to assert that "the quaint and grotesque shrubs on which this esoteric assemblage depends for subsistence, are becoming gradually exterminated." He continues: "True it is that the process of annihilation is extremely slow; yet, year after year sees portions of the rocky declivities brought into rude cultivation, whilst the constant search which is made after the dead plants for fuel still further operates to direct the axe of the destroyer. Here then we have an unmistakable fact, and one over which it is worth while to pause—not of a single species, but of a *whole fauna* surely dying out before circumstances which were adverse to its continuance. * * * In two of the islands, Lanzarote and Fuerteventura, Euphorbia canariensis seems to have already gone; and what is the consequence? Simply that not one of the numerous species which characterize that plant appears to have adapted itself even to the other Euphorbians. And if this be the case, can we wonder that the extinction of the latter should result in the complete disappearance and for ever of their entire fauna?" Probably in reference to the hypothesis of evolution hereafter briefly noticed, Mr. Wollaston remarks, "In vain do we look around for anything like an adaptation to altered, and ever altering, conditions; and I will venture to affirm that no one instance can be produced throughout this noble fauna, in which the slightest tendency is shown by even a single species to accommodate itself to the change of circumstances, and to become modified accordingly." It may here be observed that the laurel fauna of the same interesting islands is as clearly on its way to extinction as that of the Euphorbiæ.

Thus we see that the number of species in the world of animals is decreasing year by year, month by month, and probably day by day.

From these instances we gather the following conclusions:—

1st. That in limited districts, such as Britain, species—as the wolf—formerly abundant have been entirely exterminated; that in districts less limited, as Europe, the number of individuals constituting a species—as the aurochs—is rapidly diminishing.

2nd. That within the historic period large species—as the dodo—have been utterly exterminated, swept from the face of the earth, and that others—as the cassowary—are now tottering over their graves.

3rd. That man, generally the Caucasian, especially the Anglo-Saxon, has been the great agent in this destruction.

EDWARD NEWMAN.

(To be continued.)

On the Habits of a Tipulideous Larva. By EDW. D. COPE.

(From the 'Proceedings of the Academy of Natural Sciences of Philadelphia,' 1867, p. 222.)

THERE has been known in Europe for many years a small white larva, which is called the army worm, which gathers itself into large bodies forming streams of several feet in length. These bodies move forward at a slow rate, and appear to be a form of migration which the species adopts for some purpose unknown. Their superficial resemblance to a sluggish serpent usually excites repugnance in the minds of many observers. It has been found that these larvæ are those of different species of the flies of the genus Sciara, which belongs to the Mycetophilidæ, which was formerly regarded as a group of the great family Tipulidæ, or the crane-flies.

Of this genus Osten Sacken* says:—"All the larvæ of the Mycetophilidæ are gregarious, and live among decaying vegetable matters. * * Sciara is found among decaying leaves in vegetable mould, in cow-dung, under the bark of dead trees, &c. * * They may be distinguished from the larvæ of Mycetophila by their greater delicacy, and by the structure of the trophi; most of them seem to have no bristles or spines on the locomotive processes on the under side of the body, whereas the majority of the Mycetophilæ have them.

---

* Who has described the larvæ, and given the bibliography of the European species (Proc. Entom. Soc. Phila. 1854, pp. 163—170). I am indebted to this excellent entomologist for the identification of larvæ from Westtown, sent him, and for reference to the above essay.

They are even more gregarious than the other larvæ of this family, and have the singular propensity of sticking together in dense patches, in which situation they are frequently found, for instance, under the bark of trees. It is probably to the same propensity that the phenomenon known in Germany under the name of army worm (heerwurm), is due. This is a procession of larvæ, sometimes from twelve to fourteen feet long, and two or three inches broad, consisting of numberless specimens, sticking closely together, and forming a layer of about half an inch in thickness. Such processions have been often observed in woods in Germany, Sweden and Russia, but never sufficiently investigated to explain their object. That the larvæ do not migrate in search of food, we can infer from the fact that they appear to be full grown when they form these processions.

Prof. Berthold, of the University of Göttingen, gives a more detailed account of this larva,* as follows:—

"Mr. Berthold imparted, on the 17th of December, 1853, to the Royal Society of Sciences, a zoological examination of the heerwurm (army worm), which in certain years in the forests of Thuringia, Hanover, Sweden and Norway, moves like a snake several feet long, four to six inches broad, and thumb thick, which consists of myriads of small dipterous larvæ, four to five lines long. Eight years ago (Reports from the G. A. University and the Royal Society of Sciences at Göttingen, 1845, No. 5), he stated that the Tipula which was observed by the forest keeper, Mr. Raude, at Birkenmoor, was the Thomastrauer gnat (*Sciara Thomæ*), and was the means of solving a problem, which has been for hundreds of years a returning stimulus of bigotry and fear for the peasants, and for zoologists a point of earnest consideration. But when he obtained last summer from the Eilenriede, near Hanover, more new heerwurm larvæ, and Mr. L. Bechstein bred some flies out of the larvæ of a heerwurm, it gave him occasion to institute further examinations.

"The desire for association and migration cannot be compared with the migrations of all other insects and animals; for this is not done to procure nourishment, because the maggots are in such great quantity above each other, that but few would have a chance to reach the food. Also, the maggots do not show the desire for travelling immediately after leaving the egg, like many other insects, but the movement commences when the worm is grown, and not less than three lines long. From this it would appear to have some connection with the entrance into the pupa state.

---

* Nachrichten Univ. Göttingen, 1854, p. 1.

"Their metamorphosis is known; it takes place in earth, in roots of plants, under rotten logs, or in swamps. Such moist localities are selected by the heerwurm larvæ after they have come to a certain age, and the time of pupa change has arrived, which is known by the desire for association.

"The mucus which keeps the maggots together is a product of the salivary gland in Sciara ingenua, and almost all other dipterous larvæ which have a head, and which make a fine cocoon. The formation of pupæ of the heerwurm takes place surrounded by this mucous saliva. The heerwurm can be regarded as a collection of larvæ, for the purpose of mutual transformation; that is, it is accomplished through mutual protection as a period favorable to development. This connection is given up before the formation of nymphs really arrives, the individuals separating, from time to time, in search of food. When now the larvæ of large divisions of Diptera, as the Pupipares, Notacanthes, &c., have the peculiarity of changing their own skin into a cover, which is the grave of the larva and the cradle for the pupa; and the larvæ of another division of the Diptera, as the Tanystomes and the Nemoceres, before changing, strip off their cover, and are transformed free or in a cocoon, so the Sciara Thomæ presents a process intermediate between these, as the construction of the cocoon is not performed within the skin of the larva itself, but in a cavity which is made of the skins of numbers of other larvæ."

There appears, however, to have been no record of the observation of this peculiar habit of larvæ in North America, up to within a short time. The genus is known to exist here, and Osten Sacken (*l. c.*) describes a species which he calls Sciara toxoneura. Hence the following account, which I have received from my friend William Kite, teacher at Westtown School, in Chester county, Pa., is of considerable interest. The statements are those of a careful naturalist, well acquainted with the field and field study. Before quoting it, it must be noted that another account of the same phenomenon was published in 'The Friend' journal (Philada., 1864), by Charles Potts, another teacher in the same excellent institution. Some statements of this writer need correction, as farther observation convinced him: *e.g.* that they could climb.

The following are observations of Wm. Kite:—

"On the morning of Ninth Month, 11th, 1866, a company of worms was observed crossing the brick walk, or passage, east of Westtown School: the mass presented much the appearance of a thin grey snake. This is the third year that these worms have been seen about our grounds.

"This company extended over a length of about twenty-two inches, with a breadth of from three-quarters of an inch in the thickest part, to about one-eighth of an inch at the head, and one-tenth at the tail; five or six worms deep in thicker parts. The mode of progression of these singular creatures was by the contraction of an annulus at a time. They had distinct heads, and the motion of each was like that observed in caterpillars rather than that seen in earth-worms. The contraction commenced posteriorly, and was passed forward to the head in the successive rings.

"They advanced at the rate of four inches in five minutes, the hinder ones working their way over the top of the rest. Those who reached the ground or bricks by thus traversing their comrades' backs seemed unable to proceed, so that their progression naturally assumed the singular shape that drew our attention to them. Occasionally a few would diverge from the mass, near the front, forming another head, as it were; but they would soon return to the general company by crawling back over each other.

"This observation was also made on the procession which appeared in 1864; *i. e.* that the hinder ones progressed over the bodies of those that preceded, the whole mass thus taking up in the rear and laying down in front." [This is a much more rational explanation of their progress than has been offered; we having been left to suppose that the lower stratum of larvæ carry the general mass.—*E. D. C.*]

"To arrive at an idea of their numbers, about half an inch of them were lifted out of their ranks on the point of a knife; of these ninety-five adhered to it, giving say two-hundred to the inch, or, by rough estimation, 2400 in the party.

"They were about half an inch long, semi-transparent, with black heads; their alimentary canals were clearly distinguishable by the unaided eye; the colour of their contents would lead to the supposition that their food resembled that of the earth-worm. They crossed the brick path, conforming to one general direction, but varying to suit the inequalities of the walk. On reaching the grass they immediately buried themselves in the ground. This was observed to happen with a company which was seen here a year or two ago."

"Seventh mo. 1, 1867. A large company of the 'snake worms' attempted to cross a gravel walk in the yard this morning, but became entangled in the sand, which adhered to their bodies and seemed to bewilder them. School duties interfered with watching them, but I anticipated their perishing in the sand. They had managed to keep together when I saw them, after having crawled through three or four feet of sandy gravel, and may have eventually escaped. The most noticeable fact in regard to them was the presence among them, travelling with and over them, of a full-grown maggot of a fly! It was very lively, diving into the mass and emerging again, as though quite at home. How did it get there? and why did it associate with them? Was it hatched among them? Their course was about N.W."

"Seventh mo. 5, 1867. A small company of *those worms* again on the gravel walk, within a few feet of the same place as on the 1st inst. As they were going in an opposite direction from those on the 1st, they may be the same company. There were several many-footed worms, about an inch long, accompanying them; these were engaged in pulling worms out of the procession and devouring them. On both occasions the companies were noticed early in the morning, as though they commenced moving in the night. Their course was about S."

"Seventh mo. 8, 1867. A much larger company of these worms were on the brick walk. They had nearly crossed the walk before 7 A. M., showing they commenced moving early in the morning. They appeared unusually lively. Upon careful examination, we found the train extending back into the grass eighteen inches to a cluster of them which appeared to be issuing out of the ground. They moved on the surface of the ground, winding among the grass to avoid the stems. This disproves our former supposition that they emerged to avoid some obstruction. We were necessarily called off, and on our return the traces of them were lost. Some ants and one small worm seemed engaged in eating them; the worms apparently appreciated their danger, shrinking from the touch of these animals. This procession measured six feet six inches. Occasionally one would be left on the ground after the train had passed, but most of them kept with the general mass. Their course was about N.W."

"Seventh mo. 9, 1867. Two more small companies of these worms appeared, apparently the remains of the large party of yesterday. Each company was short of a foot in length, and was accompanied by quite a number of the worms noticed before with them. I caught and preserved a number of these; they resemble the worms found in cured meat, or similar ones found in many garden vegetables. Their connection with the emigrant parties seems to be that of enemies, preying on them. Course N.W."

"Seventh mo. 15, 1867. 7 o'clock.—A cool morning. Found a small company of these worms on the brick walk near the office. Some passer had trodden on them, and they were thrown into confusion: added to this, a colony of ants had intercepted their course, and carried them off in numbers. They were massed in a crowd, and their efforts to move on were defeated by the ants seizing their leaders at each attempt to move. 8.30.—The perseverance of the ants in carrying away the worms seems to demoralize them entirely, and finally two bricks being placed to protect them from passers' feet, the greater portion of them crept under one of them and huddled together in a confused mass, where they became an easy prey to their indefatigable little enemies, who were to be seen through the morning marching off with their captives, though much larger than themselves. 10 o'clock.—All gone. Course, so far as they were permitted to go, N.W."

The "many-footed worms" which devoured the Sciara larvæ were larvæ of some species of the Coleopterous family Staphylinidæ. Several specimens were sent with the Sciaræ.

I am also informed that a procession of this species has been seen on Quaker Hill, in the borough of West Chester. Dr. Benj. H. Coates informs me that he has seen their trains in Hunterdon county, N. J., and T. A. Conrad saw them some years ago in his garden in Burlington, in the same State.

On inquiry of my friend Jacob Stauffer, of Lancaster, whose MS. notes on the species of insects of his region, and their habits, are numerous, I received the following additions to our stock of knowledge of the habits of the larva of the Sciara:—

"On the 10th of August, 1865, Mr. Rathvon and myself were informed by Dr. Geo. M'Calla that we would be interested by examining an army of small shining worms on the march in the yard of Col. D. Patterson, in W. King-street, Lancaster.

"On our arrival we found the order of march thrown into great confusion by boiling water, which the women had poured along the line. I collected quite a number of stragglers from the main army thus routed, as did also friend Rathvon. These I subjected to a close examination under a strong magnifying power. My notes read thus: 'A portion, about two feet in length, looked like a shining cord, not uniform in outline, yet compact. These larvæ were about half an inch long mostly, perhaps three-eighths of an inch, and seven-sixteenths and one-thirty-second parts of an inch in diameter. Their heads of a glossy jet-black colour, as also the anterior edge of the first joint of segment: rest of the first, and the second and third joints of a translucent milky white, dorsally watery, with an interior wavy, brownish, intestinal canal, visible through the transparent skin; there is also a lateral tinge or bronze-yellow; otherwise of a shining, water-and-milk-like colour. I could observe no pectoral or anal legs; they moved by contracting and extending the segments of their body (twelve in number) alternately, like that of a dipterous larva of Tipulidæ. In motion the convolutions of the intestinal canal were very apparent. They seemed to interlace with each other, but, having been disturbed, I cannot venture to say whether after any precise order, or by simple conglomeration as chance may demand. When first seen they were moving in a broad columnar mass, rope-like, seeming like a shining guard-chain cord, of considerable thickness and quite ornamental, like jet beads mixed in with pearly white beads in motion.'

The following is a copy from a letter by Prof. W. S. Roedel, Wytheville, Virginia, Aug. 4, 1865, in his own words:—

"On Saturday, July 15, 1865, at North Lebanon, Pa., I observed in a path at the foot of a hill, what I at first glance supposed to be the cast-off skin of a serpent, which the object resembled in colour and general appearance, but what, upon close inspection, I found to be a multitude of caterpillars, a half-inch in length and one-thirty-second part of an inch in diameter; head of a dull red or brownish colour; bodies smooth and somewhat glistening.

"These worms moved upon one another, piled upon and irregularly interwoven among each other like a flattened rope. The head of the column was much broader than the rest, being two inches wide, from which dimension the column gradually tapered (to a point, I suppose, for I did not see the end of it). The length of the column was four feet to a fence, beyond which I did not examine it.

"A portion of the column lay in the grass, through which it moved without interruption, as if it had been a solid mass. The rate of motion was extremely slow, not exceeding one-eighth of an inch in a minute. The colour of the mass was as much like a rope of tow which has been exposed to the weather as anything I can think of; it might be called a rusty gray. The column was not cylindrical—that is, a cross section would be elliptical."

The 'Springfield (Mass.) Republican' of August, 1865, gives an account of a "reptile" found at Lee. "It was nearly four feet in length, about the size of a man's finger, and shaped like a whip-lash; and on close examination the whole body was found to be composed of small worms about half an inch in length, with large black heads, and semi-transparent body. On separating them into fragments, they would immediately re-form into a snake shape, and crawl slowly off. One or two similar snakes have recently been seen in that vicinity." This was copied into the 'Lancaster Evening Express' of Saturday, August 12, 1865.

Remarks on the Birds of Ailsa Craig.

By THEODORE C. WALKER, Esq.

IN June, 1866, having obtained permission to visit Ailsa Craig, I proceeded to Girvan, from whence I took a sailing-boat across to the Craig, which lies opposite the harbour, eleven or twelve miles out, in the Firth of Clyde. The huge dome-shaped rock rises to the height of more than 1100 feet: it is precipitous on all sides except on the east, where, on a triangular delta of shingle and rock, a house is built for the accommodation of the cragsmen and keeper, who net the sea-fowl, for the sake of whose feathers the Craig is rented from the Marquis of Ailsa. In winter there is a man always employed in cutting curling-stones. Having taken notes at the time, perhaps an abridgment of them may not prove uninteresting to the readers of the 'Zoologist.'

Gannet.—The gannet or Solan goose breeds in great numbers on the south-west of Ailsa. Their breeding-place is mostly confined to a small bay or amphitheatre of rock rising precipitously from the sea. When I first saw the "gant's city," as the cragsmen call their haunts, the period of incubation was at its height: it was about the 20th of June. After clambering over masses of rock and threading an imperceptible path like the track of a wild goat, I follow the climber as he leads the way to the west side of Ailsa. Our way led along the "Barr Head," or edge of the precipice: on one side the slope of the craig rises steep as the roof of a house, and on the other is the precipice, in some places overhanging the beach. The myriad voices of the gannets are heard long before their haunts are reached: cautiously clambering to the edge of the precipice, what a sight is displayed! A huge amphitheatre of basaltic columns ranged all up the side in the most perfect order round a lovely little bay, the top of each column being broken off, and each supporting the nest of a gannet with the adult bird sitting. A superb sight it is to see hundreds of the snow-white birds sitting on their nests, from close to your feet down the whole side of the rock to the water's edge, and to hear their discordant and deafening cries, till one is almost bewildered. At our approach the nearest gannets fly off their nests, but keeping close round and uttering their guttural cackle. Alarmed at our continued shouting the whole legion of birds leave their ledges and whirl round and round thick as snow-flakes in the winter wind, until one's eyes are almost dazed with their flight, and one is fain obliged to retreat from the edge of the precipice. They gradually settle down again, and in the calm and lovely evening, it is an interesting sight to watch their mates flying from afar across the deep blue sea, their long black-tipped white wings glancing in the setting sun, as they near the craig, when, wheeling in the air, they perch beside their mates, who welcome them with a satisfied cackle, which changes to a choking gulp as they swallow the fish which their partners have disgorged. And to see them from on high plunge, with the speed of thought, into the blue-green sea beneath, dashing up the spray as they dive after their finny prey! With what force they descend, and how marvellously their bodies are adapted for the plunge! Many of the gannets have built their nests on the verge of the precipices, and some a few feet down on the tops of the octagonal columns, and cautiously stepping down I examine their nests: they are of large size and mostly made of coarse campion-stalks, fern-leaves, sea-weed, &c., lined with finer grass and weed, and in each one large egg, which, being nearly the end of the hatching-season, are soiled and much pecked at. In a few nests further down I observe several newly-hatched wee gannets, totally black, with a downy powder like the germs of feathers. In several eggs the young are squeaking through the holes which the parent bird has chipped. I break the shell and liberate several astonished youngsters, much to the discomfiture of the old folks, who hover round cackling most ferociously. The young when just hatched have a curious look, little black imps with a big head, fat body and tiny webbed feet sprawling about the nest. They are perfectly bald, about four inches long, and very lively. The gannets here are much wilder than those at the Bass, where they allow themselves to be approached and even handled; but woe betide the hand that is gripped! they bite to the bone. A long time we linger by the haunts of the gannets, watching the birds return from their foraging expedition and disgorging their prey at the nest.

Kittiwake Gull.—The kittiwake gull breeds in great numbers all round the precipitous sides of Ailsa, the ledges and slabs of the columnar rock affording unusual facilities. They generally select the highest parts of the cliffs, as being more inaccessible and less liable to intrusion. The nests to which I scaled on the cliffs were very difficult of access, clinging to the rocks high overhead; but a good opportunity occurred when the cragsman offered to show me a breeding-place that could be easily scaled. After passing the ruins of the castle and keeping in the hollow, where the bracken fern grows luxuriantly, we come to a gully, down which in wet weather a streamlet trickles; here I am shown some ledges on which are eighteen or twenty nests. I take off my boots and jacket and cautiously creep along the verge of the precipice and along the ledges which overhang the sea. The kittiwakes, alarmed at my approach, leave their nests and fly around me, boldly dashing close to my face, so that I can feel the fan of their wings, crying their mournful "kittiwake, kittiwake." Their nest is composed of a layer of mud at the base, on which is laid a thick matting of dry campion-stalks (*Silene maritima*), and lined with shreds of grass and sea-weed. They do not build a fresh nest every year, but partly demolish the old one, and add fresh dry weed, &c., so that some nests are much thicker and deeper than others. They plaster the foundation to the rock with wet mud, for which purpose one very frequently sees them hovering over a dripping spring which trickles down the cliffs at the back of the house. They seem rather various in the time of laying, for in some nests the young are just hatched, while in others only the first egg is laid, and I saw one nest in the process of building. The eggs vary greatly in colour and markings, from a creamy blue speckled with slaty brown, varying in every shade of brown to a rich deep umber, clouded with darker blotches. Their number varies also: of the many nests which I visited in different parts of the cliffs, four was the prevailing number; some had but three, others five, but six is the greatest number of eggs I have ever seen in one nest. The young when newly hatched, until they are fledged are mottled with darker brown like the eggs: this is a curious feature in all the gull tribe from the blackheaded to the great blackbacked, that the young are always brown mottled with darker shade. The delicate tints and gentle manners of this handsome gull remind one of a dove. Breeding on the inaccessible cliffs and not so much given to perching on the rocks, and being more timorous and cautious birds, they are seldom caught in the nets like the puffins, razorbills and guillemots. Their eggs seem to be considered great delicacies by the cragsmen, as the heap of egg-shells behind the house testifies; but the flavour I cannot vouch for, as the eggs I saw were all "clocked" or addled.

Puffin.—The puffin seems the most numerous of the birds which frequent Ailsa Craig: it breeds everywhere all up the sides of the precipice where a patch of soil is found in which it can burrow, as it always prefers to burrow in soil to laying its egg in the crannies of rock. Wherever a tuft of campion blooms there it makes its burrow, at the extremity of which it lays its single egg, of dull white ingrained in the shell or clouded with very light drab. The eggs vary very little in markings, with the exception of being lighter or darker, but the form of those I saw varied a good deal. The "patie," as the cragsmen call the puffin, breeds not only about the cliffs, but all over the dome of the craig to its very summit. Wherever a heap of stones occur there is sure to be the burrow of the puffin, with two or three demure little puffins sitting on the stones looking at you; they allow themselves to be approached very closely, and then by a rapid motion of the wings dart down and plunge into the sea. A very pretty sight it is to see them sitting on a gray stone surrounded with the pure white blooming bladder campion and rich green of the bracken fern: their pretty orange feet contrasts with the green, and their short wings and curious beak look very grotesque. They often use a rabbit-burrow to lay their eggs in, instead of excavating one for themselves, but woe to the ungloved hand that is put into their burrow when the puffin is at home! their neb meets in the flesh, and they hold on, and will not let go, as my hands can testify.

Razorbill Auk and Guillemot.—The three rock-birds, razorbill auk, guillemot and puffin, or, in the craig phraseology, "strannie," "cock" and "patie," are the most numerous birds which breed on Ailsa, and it is for their feathers that the craig is rented. As they all breed on the precipices and *débris* of rock they are easily captured with nets, traps, poles, &c., owing to their habit of perching on the rocks and cairns of stone. The razorbills and guillemots are caught in great quantities with large meshed nets, not unlike herring-nets, spread over the rocks. Being eager to obtain a few specimens of birds and also to see their breeding-haunts, I follow the climber one morning as he trudges along the path through the chaos of stones, on which raised beach of boulders the house is built. Our path lay up a steep track among huge fallen masses of rock many tons in weight. Arriving at the stunted elder bushes, which are the only trees which grow on the Craig, we take off coats, jackets and boots, and all superfluous clothing, and strapping a vasculum tightly on my back, I am ready to proceed. The morning mist is just rising from the summit of the Craig, and the sun shines bright and clear, and the sea, without a ripple, lies sleeping in the sunlight. The birds far above us are wheeling round, and every moment arriving from out at sea, flickering like ethereal spirits in the glowing light. Eager to explore the crags above I keep close behind the cragsman as he leads the way, clambering over huge fallen rocks, leaping from crag to crag, now cautiously creeping along narrow ledges overhanging the sea, carefully avoiding all loose masses, till we gain a considerable elevation; but only puffins as yet breed here, and on every patch of earth between the rocks a demure wee "patie" sits, which as we approach flies, or rather darts, downwards with a swift flickering of its wings, and plunges into the sea. After resting a minute the climber takes a different path, while he points out to me the way to reach a net above. I scrape my stockings into the earth to prevent slipping on the sharp rocks, and clamber up, and aided by a cool head and careful step, I near the net. Three or four razorbills are struggling violently as I approach, and groaning with their peculiar note: I seize hold of an unfortunate "patie," and it seizes hold of me, giving a severe bite. I set to work to extricate the razorbills, but have great difficulty in taking hold of them, as they seem all mouth, biting most savagely and holding on grimly. I obtain two very fair specimens and kill them, tie them together ready for the climber to carry down, and have time to survey the scene. A sublime yet awfully grand spot! High above me the dizzy precipice frowns with grim crags and huge rocks that have fallen from the heights above, blocking up the path—all wild, barren and grim, with scarce a patch of soil. Hundreds of kittiwakes have built their neat little nests to the rocks, and are flying about me and arriving from the sea, and wheeling far overhead: on every crag, or cranny, or jumble of rock, a solemn razorbill or guillemot sits, anon darting downwards into the sea, where, in the glassy green sea below, they are floating in chains or circles, or diving and gambolling and splashing the water over their backs in sport. The net is just stretched over the rocks and held in its place by blocks of rock, which with a very slight touch could be sent crashing down the precipice: I have to use great caution in not displacing them, as a stumble against the meshes of the net would send the whole lot down. The birds, as they perch on the rock or come down to their eggs in the crannies, get entangled in the net, and in struggling they only get held the faster, some of them getting entangled and doubled up in a remarkable manner. But far below me I see the climber, after resetting several nets, tie the birds together and pitch them down, when they fall into the sea with a great splash and remain floating about. I have leisure to examine the haunts of the rock-birds while I wait for the climber. I climb higher up the rocks, to a place where the razorbills are sitting close together. They allow me to approach almost within arm's length, and then dart down into the sea. They lay their single egg on the bare rock, without a vestige of a nest, generally laying in a crack or fissure of the rock, where their eggs are screened from the observation of the great blackbacked and lesser blackbacked gulls, which, as the cragsmen tell me, devour their eggs. I scramble to a huge mass of rock against which other masses have fallen, and in the fissures I find lots of richly-marked eggs. The egg of the razorbill is not unlike that of the guillemot, only blunter at the thin end, and the ground colour is generally white or dull light cream or brown, speckled, often very richly, with red and brown. The eggs which abound on Ailsa are more richly marked and speckled with minute spots than specimens I obtained at Flamborough Head and Bempton, where they had generally a white ground, sparingly speckled with dark brown. The shell is extremely thick. The climber now coming up, we shoulder the bunches of birds and proceed along the rocks to several more nets, carefully avoiding the loose masses of rock, and leaping from rock to rock. We kill the birds by wringing their necks; we tie them in bunches, and, where we can, pitch them into the sea or down on the beach beneath. Here the birds are in great quantities, and the noise they make is terrible; the deep baying of the guillemots, the groaning of the razorbills, as we approach, and the wail of the kittiwakes, make a horrible clamour, enough to make one's blood run cold to hear them. The eye is almost dazzled by the multitude of flickering wings, and as I look down I am almost tempted to throw myself over into the bright sea. Taking a wee pull at the whiskey-flask I feel better, and while the climber is busy with the birds, I climb to the guillemot's roosts and see their breeding-places. The guillemot prefers to lay apart from the razorbills, but I have several times found their eggs close together. They are not so much given to laying their eggs in the crannies; they lay on the bare rock, sometimes on ledges two inches wide, where, owing to their pear-shaped form, they turn round instead of rolling off when the bird gets off its perch. The bright colours of the beautiful eggs look very pretty on the gray rocks; they are of all colours, from deep green to pale sea-green, from pure white to light blue, and of all kinds of marking, zigzag lines and blotches and spots and speckles and specks. After examining their breeding-places we prepare to descend, which is by far the most difficult task, owing to the smoothness of the rocks, rendered slippery by the excrement of the birds. With great care I follow the climber, and clamber down the precipice; one false step and one would be dashed to pieces on the beach below. The only place where I have a difficulty is crossing a sort of chasm with slippery rocks on each side: I leap and throw myself on the rock on the other side in safety, and a few more cool and cautious steps bring us to the bottom, which I am thankful to reach safely. Donning coat and boots, &c., we each shoulder a bunch of sixteen or eighteen birds and trudge along to the house, leaving the rest to be brought round in the boat. The birds are spread out in the empty room of the house, ready to be conveyed to Girvan, Ballantrae and other places to be plucked. I observed on the ledges many ringed guillemots breeding promiscuously with the common guillemot: the proportion seems about twelve common to one of the ringed.

Lesser Blackbacked Gull.—The lesser blackbacked gull breeds on the dome of Ailsa among the bracken fern and campion-leaves: their eggs are very difficult to distinguish except one sees the bird leave the nest. On their haunts being approached they leave the nest, and sitting on the rocks watch whether they are observed. They are more shy than the rock-birds, as their nests are placed in more exposed situations. Their nests are difficult to find; they are generally made at the foot of a rock or stone, in a slight depression in the ground, and lined with leaves and dry grass, and generally contain three eggs of a stone-brown, speckled and blotched with darker brown. The young when first hatched are very like those of the kittiwake, only considerably larger. When the young are hatched the parent gulls are more daring. On approaching a nest with two young gulls in it, I handled one rather roughly, so as to make it squeak, on which the old gull soared to a great height and dashed down close to my head, rising again in a graceful curve, and swooping down almost touched my cap; the rustling of its feathers and its cry were clearly meant to intimidate me. I stood admiring it for a considerable time as it swooped down, and, altering the angle of its wings, was as quickly borne aloft, and wheeled round again without even flapping its wings. The cragsmen tell me that they sometimes venture to strike a man if he meddles with their young; they also say that they devour the eggs of the guillemot and kittiwake, brushing them off the ledges and feeding on the tempting morsels "like a christian." They keep their breeding-places remarkably clean, unlike the rock-birds, which defile the rocks on which they perch, and one may see them sitting on the rocks basking in the sunlight for hours while preening their feathers. They did not appear to feed in the immediate neighbourhood of Ailsa, but to bring their food from long distances, following the shoals of herrings, sprats, &c., and often seizing their food from the surface of the water without settling.

Herring Gull.—The herring gull also breeds among the bracken ferns, &c., on the terraces above the precipice where the Craig rises in a dome shape, intersected by irregular terraces. The herring gull is seemingly a very suspicious bird, directly an intruder approaches flying to meet him, and soaring overhead cackles and croaks, disturbing all the birds that are near. When one is stalking a bird or watching, this provoking gull will come soaring above and putting the birds on their guard. The eggs of this gull are very difficult to distinguish from those of the lesser blackbacked gull: they are on the whole rather larger, but the eggs of all the gulls vary so much in size and colour that the only safe plan is to identify the birds on the nest, which is not an easy matter to do with this wary and suspicious bird. I forgot to notice the proportion of lesser blackbacked to herring gulls, but I believe the latter predominate. The cragsmen tell me this bird is very much given to eating the eggs of the kittiwake, but I did not observe it myself. The nest of this gull is placed at the foot of a stone or rock, from which its mate keeps watch when near. It is a shallow structure, formed of half-dried campion-stalks. The bracken fern, hyacinth and bladder campion are the common plants on the Craig: in summer the flowers of the bladder campion give the dome of Ailsa a beautiful white colour, like a carpet of snow. The mate of the sitting bird often takes its stand on the rock above the nest when unoccupied, and, while one is yet some distance off, soars aloft with its mate, circling round one and uttering its cry, and occasionally swooping down. The herring and lesser blackbacked gulls would seem by this to prefer nesting on islands and flat ground to the precipices, when they have a choice: I did not observe one nesting on the precipices. The larger gulls, being wary, are not often caught: occasionally one is caught in the steel traps set for the puffins, but they are not sought for their feathers. I did not observe any immature gulls of any kind whatever at Ailsa Craig.

Great Blackbacked Gull.—A few pairs nestle on the upper part of the Craig, in similar situations to the two last mentioned. I did not observe either the common or blackheaded gulls: the locality is not suitable for their breeding haunts.

Peregrine Falcon.—I was told that a pair annually nest on an inaccessible ledge on the highest precipice of Ailsa, called, if I mistake not, "Ashy-doo," but I did not observe them during my last visit.

Raven.—Several pairs of ravens nest on the inaccessible ledges, finding abundance of food in the dead sea-fowl, &c.

Grouse.—A weathered egg in the yelk was brought to me by the cragsman: it was found by itself on the turf near the summit of the Craig, showing that grouse sometimes fly across from Ayrshire, but there being no heather they do not stay.

Shag.—Three or four pairs nest on the ledges of the highest precipice: their favourite fishing station is a flat rock at its foot called the "Scart Rock." The shags were formerly more abundant than now.

Stormy Petrel.—Fellow-members of the Glasgow Natural History Society have told me that they have found this petrel under the huge fallen masses of rock on the shore, and have also observed them in the evening flying about at sea.

The above list is far from being perfect, a great number of birds nesting and frequenting the Craig which I have not enumerated, besides occasional visitors; but the above is the substance of notes written at the time, and I hope at some future period to be able to give a further list.

THEODORE C. WALKER.

Woodside, Leicester.

Bos scoticus.—Seeing Mr. Alston's account of these cattle at Cadzow (Zool. S. S. 669), I inquired of my friend Mr. J. M——, late of Chartley Hall, concerning these cattle in the park at Chartley. He informed me that during several seasons they had not bred, owing to the superabundance of bulls; and having introduced some heifers into the park the calves produced were in colour like the bull, having black hoofs, mouth, &c., and could scarcely be distinguished from Bos scoticus, thus showing the strong native blood; but this may not hold good in all cases. The herd always kept exclusively apart from the tame heifers, and since their introduction were tamer: the cattle previously were very wild. A keeper going to tend an aged cow which was dying, she turned upon him and threw him down, but managing to extricate himself he took to flight just in time to save himself from the infuriated herd, as the bellowing of the cow brought them around her. He described them to me as being larger and finer than those at Chillingham.—*Theodore C. Walker; Woodside, Leicester.*

Malabar Superstition respecting the Liver of the Tiger.—In the 'Zoologist' (Zool. S. S. 1217 and 1253) I have called attention to some curious local superstitions respecting the livers of the otter, the bear and the wild boar. I have just met with an instance of a similar idea as to the tiger, which obtains amongst the natives of the Malabar State of Cochin, and is recorded in the following words in Mr. Francis Day's interesting work, 'The Land of the Permauls,' p. 440:—"Natives assert that a new lobe grows on to the liver of a tiger every year it lives, and therefore by an examination of that organ the animal's age can be accurately ascertained." It seems very singular that this opinion should be so widely spread, and applied to four such very different animals as those above mentioned.—*J. H. Gurney; Marldon, Totnes, August* 24, 1868.

Honey Buzzard at Yarm.—I had a very fine female specimen of the honey buzzard sent to me in May: it was obtained in this neighbourhood, where I have known a specimen to occur before.—*William Lister, jun.; Glaisdale, Yarm, Yorkshire, July* 27, 1868.

Note on Montagu's Harriers, old and young, obtained in Cornwall.—In examining two specimens of this year's Montagu's harrier (male and female) which were shot this week with the parent birds, on the property of Mr. M. Henry Williams, near Michell, in this county, I observe the plumage of the two birds agrees, with the exception of a darker tone of colour along the mesial line of the feathers of the breast and belly of the male: in other respects the colour of the under parts in both specimens exhibits a uniform light bay-brown colour, and the upper plumage dark umber-brown, with the feathers more or less deeply bordered with rufous-yellow: the male and female parent birds were sent with these specimens; the former apparently a two-year old bird, the gray slate plumage gradually cropping out with the rust-coloured drop-like streaks on the flanks.—*Edward Hearle Rodd.*

Snowy Owls in Shetland.—Dr. Saxby has sent me three magnificent snowy owls from Shetland this year: their skins are still soft and pliant.—*J. H. Gurney, jun.*

Sedge Warbler in Dry Places.—I have read with much interest Lord Clermont's note on the sedge warbler in dry places (Zool. S. S. 1342). It is, I think, not the sedge warbler, but the reed warbler or wren, or a closely allied species, which Lord Clermont has heard at Twickenham. I have resided here between seven and eight years, and every summer a pair or two of birds similar to those heard by Lord Clermont frequent and breed in my garden. They arrive about the middle of May and nest the middle of June. On the 19th of June, 1862, I took the nest, containing three eggs similar in colour to those of the reed warbler, and shot the parent birds: it was built in a small cypress tree and attached to the twigs in a similar manner to that of the reed warbler to the stems of the reeds: the materials were rather different, and it was not so deep. The parent birds strongly resembled the reed warbler, but struck me as being taller on the leg, and altogether a longer and slenderer bird. I sent them without note or comment to Mr. Cook, the birdstuffer, at Derby, who is a very intelligent and observant man, and was for some years in Mr. Leadbeater's establishment. I at once received a letter from him, requesting me to tell him what species of warbler I considered the species to be, as he had never seen or stuffed any like them before. "I have stuffed," he said, "scores of reed warblers, but never any like these." As soon as Mr. Cook returned the case containing the birds and nest I took it to London, and showed them to my kind and excellent friend Mr. Gould. He examined them with much care and interest, but said he could not consider them to be anything but the reed warbler. He told me he had frequently taken the nest of this bird at some distance from water. Since then I have not thought much about the matter. Still I cannot but think that it is a matter deserving much closer study and investigation than have ever yet been bestowed upon it—whether we have not two closely allied species confounded under the name of reed warbler. There are two very interesting notes by Mr. Robert Mitford, of Hampstead (Zool. 9109 and 9847), which tend most strongly to confirm this suspicion, and I have often looked for something more on this interesting subject from Mr. Mitford's pen. My friend Dr. Bree, in his 'Birds of Europe not observed in the British Isles,' describes a closely-allied species, Sylvia palustris, *Bechstein*, in words which precisely tally with the observations made on the birds which frequent my garden. The male bird immediately took the place of the female on the nest when she had been shot. I believe, however, that it is a habit in several of the Sylviadæ for the male and female bird to sit alternately upon the eggs. I know that this is the case with the blackcap. During the breeding-season on warm nights the male bird of my warbler sings most sweetly the greater part of the night.—*H. Harpur Crewe; Rectory, Drayton-Beauchamp, Tring, August* 7, 1868.

English Sparrows in America.—I think the following newspaper paragraph will be interesting to some of the readers of the 'Zoologist:'—"In the spring of 1866 four pairs of English sparrows came to the Union-square Park, New York, and there built. Three pairs occupied the trees, one ejected a wren from her little house, the only bird-house then in the square, and took possession; a fifth built in the ivy of Dr. Cheever's church, facing the square. The industry of these little fellows in devouring the measuring worm (so great a nuisance that most persons avoided passing through the park, preferring to go round during their occupancy; and so numerous were they that they did not leave a leaf on any tree except the Ailanthus) were such that boxes were provided on almost all the trees for them. They were very prolific, those hatched in the spring rearing a brood in the autumn, and the old pair rearing four or five broods. In one year they increased from five pairs to a flock of seventy, and they are now estimated at 600. Last summer a reward of one dollar a-head was offered for worms, but the birds had eaten the last one: they also ate moths, grasshoppers and many other insects. These birds have extended about forty miles in every direction. The estimate that they destroy in Europe one half-million bushels of grain was probably correct; but how much more or less would the insects they devour destroy? The question is, simply, which is the greater evil, worm or bird, and which most readily controlled." When I was in America, some few years since, I noticed in many places, both in the States and in Canada, small wooden boxes, fancifully made to imitate churches, houses, &c., placed about; some in trees, on poles and in places where the little wren frequented, and it was strange how quickly a pair of these little birds would take possession and rear their young in one of these fancy abodes. These little birds are very strictly preserved in many parts of North America, and I am very glad to find that our common sparrow's services are likely to be better appreciated in America than they are in this country.—*Edward Sweetapple; Lydney, August* 24, 1868.

Common Crossbill in Surrey.—On Sunday, the 12th of July, my attention was directed to a fine male crossbill, one of a flock which had been observed during that and two previous days in the grounds of a relative. I watched the male feeding on the fir-cones for some time, and, as the flock were considered to be doing mischief, the order went forth for their execution. On the following day the gardener procured five, *viz.* the old male and female, two young males of last year, and one female of this year, which, from the strength of its bill, general size and stoutness, would appear to be a young parrot crossbill, supposing Loxia pityopsittacus a good species and not merely a variety of L. curvirostra.—[Signature omitted.]

Whitewinged Crossbill in the County Dublin.—If I have not met with the crossbill in Dublin for the last five years, I have this year made a more important addition to our Avifauna in its congener, the European whitewinged or two-barred crossbill of authors. This bird is apparently a female or young bird; it is dull brown, scarcely tinted with greenish yellow, having conspicuous white tips to the wing-coverts forming the two broad distinctive white bars across the wing. I have saved the bird beautifully, and preserved it in my collection.—*H. Blake-Knox.*

Crossbill at Wingham.—On the 27th of July I heard crossbills as I was walking in the grounds close to my house, and almost immediately I saw a splendid old male with a female on a Lebanon cedar some twenty yards from me. The male bird shone like scarlet coral in the sun, as he swayed to and fro on the extremities of the branches. They seemed restless, and soon went off to an old larch, which they left again, and I lost them. Having never before seen crossbills in the summer, I strongly suspected they had been breeding here. This morning I have just learned that some masons, who are at work about my house, picked up a young crossbill at the edge of a pond where they were mixing their mortar: the bird was covered with mud and half-drowned. It lived one day, and then died. It was seen by my gardener and also by my gamekeeper, to whom the men showed it. I think this is conclusive as to the fact that the crossbill occasionally breeds in this country.—*W. Oxenden Hammond; St. Alban's Court, Wingham, Kent, August* 8, 1868.

PS.—A closer inquiry refutes the persuasion I felt that the crossbills had *bred* at my place. The bird caught (not *the pair*) was thrown away when it died; but I have seen the man who caught it, and he says it had red and green feathers. If I am right in thinking that no red feathers come till the first moult, it then was not a young bird, and my nesting theory fails. However, the presence of these birds in summer still would lead me to suspect that it bred.—*W. O. Hammond.*

Common Crossbill in Cornwall.—I believe I have mentioned the general distribution of the crossbill in the Land's End locality—extending, in fact, to the Scilly Isles. I find from correspondents that the eastern part of the county has had an immense immigration of this species, and from what I have seen and heard during the past week the numbers appear to be steadily on the increase. I have received from Scilly for some weeks several specimens, and seven or eight specimens were brought over yesterday from the Abbey Gardens at Trescoe. I have seen no specimen in a vermilion state of red, but in those specimens where the colour of red prevailed at all there was generally a subdued dull tile-red tone clouded over with brown and bluish gray more or less. One of the specimens from Scilly yesterday was remarkable for its colouring; the upper tail-coverts were bright canary-yellow, and the rest of the body was intermixed with blotches of red, brown, gray and yellow. A very large proportion of the specimens which have come under my notice have been a dull brown, with an extra tone either of red, yellow or green on the upper tail-coverts.—*Edward Hearle Rodd; Penzance, July* 29, 1868.

Migration of Crossbills.—There appears no mention in the 'Field' of the migration of crossbills now taking place. The first notice I had of their arrival was hearing of the receipt of several specimens by Mr. Vingoe, of Penzance, from Scilly. This made me keep a sharp look-out in the eastern part of Cornwall, where the fir plantations on the edge of the moors would be a likely locality; and on the 18th of July I captured the first specimen, since which date their numbers have been steadily increasing, and there are now several parties of from six to fifteen individuals in all the different states of plumage. It has been nearly impossible, from the way they hide among the fir trees, to find them, except by listening early in the morning for their peculiar sharp note. There are two letters in the 'Standard' saying they have appeared in Gloucestershire and Tipperary; and it would seem that, contrary to what we should expect, the migration has taken place first in the west.—*Correspondent from Trebartha, in the 'Field.'*

Crossbill in Ireland in 1868.—I have had many reports of crossbills in the north-east of Ireland this year—the fruit of my last communication (Zool. S. S. 1133) on these birds breeding in Kildare; but unfortunately they were anonymous, and of course worthless, except to my own conscience. In no case was breeding mentioned. Irrespective of these communications, I have seen many birds from Templepatrick and various parts of Armagh and Downshire—perhaps forty in all. The most lamentable sight one could imagine was a bundle of twenty of these beautiful birds cruelly mangled: some were intense rose-pink, like the pine bullfinch—others duller red—others yellow and green, but all beautifully glossed; in some all the tints were blended, having a rainbow-like effect: all were adult birds—all quite worthless. In July I succeeded in saving three tolerable birds from a lot killed in Templepatrick: they are adult males in full plumage, but the dress is changing from rose-pink to yellow and copper—the pink, however, greatly predominating. This change of colour is not the effect of moult, but from the sun; it is common in all our pink glossy feathered birds, as the linnet, redpole, &c., which all turn from pink to yellow and copper-colour in the autumn; it is precursory to the autumn moult. The linnet, however, is often permanently golden on the breast. There can be no doubt that these crossbills bred in Ireland, and that in all likelihood it commonly breeds in this country.—*H. Blake-Knox; Belfast, July*, 1868.

Rosecoloured Pastor near Yarmouth.—Yesterday my nephew, Henry Harmer, shot in the garden of Mrs. Charles Brown, in Southtown (a suburb of this town), a female of this species. It was feeding under a mulberry tree, where it had been observed twice the day before. On being disturbed the first time it flew off with a mulberry in its mouth. It is an adult female, in fair plumage, and very fat.—*Fielding Harmer; Great Yarmouth, August* 12, 1868.—*From the 'Field.'*

Roller near Carlisle.—A fine specimen of the female European roller (*Coracias garrula*, Linn.) was killed on the 17th of July last, at Carlatten, near Carlisle, and is now in my possession. It was in fine plumage, and is a very beautiful bird. The stomach when opened contained black beetles and caterpillars, some of which were alive.—*Samuel Watson; Solway Terrace, Carlisle.*—*Id.*

Scarcity of Hirundines.—I wish to record that I have never known so few of the two common species of swallows as this year.—*T. Bell; The Wakes, Selborne, Alton, Hants.*

Three Species of Columbidæ breeding at Selborne.—Both last year and this three species of our Columbidæ have nested in my park, the stock dove having selected a hole in a large pollard ash formerly occupied by owls.—*Id.*

Land's End Waders.—I have observed that we get very early visits of various migratorial species of sandpipers, Tringæ, &c., which go northward to breed, and as soon as the plumage of the young birds will admit of a lengthened flight we can generally calculate upon their visiting the southern and western shores and marshes of Cornwall, in most seasons about the second week in August. I observed the other day a specimen of the reeve, also an adult specimen of the green sandpiper, and a very finely plumaged specimen of the wood sandpiper, apparently a bird of this year, from the dorsal spots having a strong tinge of yellow, which in the adult bird are pure white. The early appearance of these birds seem to show that the uninterrupted fine summer weather we have had has favoured the early crops both in the animal as well as vegetable world.—*Edward Hearle Rodd.*

Bitterns in Ireland.—I doubt if Ireland was ever a great place for bitterns, turf-bogs being more numerous than fens, and fens being the habitat of the bittern; still more so is it a scarce bird in the present day. I therefore think it worth recording that two of these birds occurred last winter in the North of Ireland, one at Ballygowan, the other in the County Donegal.—*H. Blake-Knox.*

Lesser Tern in Devonshire.—On the 14th of August I received one of these birds from Exmouth: it had been shot the day before. It was an adult bird, but partially in moult.—*Cecil Smith; Lydeard House, August* 19, 1868.

Black Tern in Somersetshire.—On Tuesday, the 18th of August, I was at Burnham, in search of birds for my collection: I saw a rather large flock of black tern, in number perhaps about twenty, out of which myself and a friend who was with me obtained three each, and, had we been so disposed, might have shot nearly the whole flock, as they came and hovered over their dead companions, quite regardless of our breech-loaders. Five of the birds killed were young birds of the year; the other a mature bird, but changing to its winter plumage, the neck and breast being mottled with white.—*Id.*

The Ashby Decoy.—The enclosed, which I have cut from the 'Stamford Mercury,' may perhaps interest the readers of the 'Zoologist:'—"One of the best existing decoys in the kingdom is now in the market, namely, that of Ashby, Lincolnshire, which is announced for sale by auction, by Mr. C. J. Calthorpe, in October next. The late Henry Healey, Esq., had a careful account kept of every day's capture during the last thirty-five winters, and the book containing these details show the following results:—

An Account of Wild Fowl killed at the Ashby Decoy, from September, 1833, *to April*, 1868.

	Ducks.	Teal.	Widgeon.	Shoveller.	Pintail.	Gadwall.	Tot.
1833-34	1884	1232	102	—	9	—	3227
1834-35	4287	1860	140	16	54	—	6357
1835-36	959	788	38	16	7	—	1808
1836-37	768	326	24	14	—	—	1132
1837-38	1511	509	47	11	4	—	2082
1838-39	758	791	21	2	4	—	1576
1839-40	2014	2002	94	21	74	—	4205
1840-41	2584	993	126	13	8	—	3724
1841-42	1666	908	28	5	6	—	2613
1842-43	1094	2077	49	6	2	—	3228
1843-44	1004	1036	88	3	3	—	2134
1844-45	1298	1181	65	1	2	1	2548
1845-46	1022	1321	39	3	5	1	2391
1846-47	1428	1005	43	5	4	1	2486
1847-48	1212	883	36	—	1	1	2133
1848-49	1740	1971	53	9	5	—	3778
1849-50	1145	956	27	—	2	1	2131
1850-51	380	853	34	—	3	—	1270
1851-52	632	1003	72	1	2	1	1711
1852-53	2682	3279	67	2	26	3	6059
1853-54	2425	1605	75	1	3	2	4111
1854-55	1298	1221	89	3	2	3	2616
1855-56	1004	781	33	4	4	—	1826
1856-57	763	771	27	11	1	2	1575
1857-58	634	1566	110	24	11	3	2348
1858-59	715	1208	82	4	4	—	2013
1859-60	734	1204	83	7	1	—	2029
1860-61	1121	2365	23	34	3	1	3547
1861-62	1605	1145	54	11	6	—	2821
1862-63	843	1481	25	14	1	1	2365
1863-64	2326	1842	82	20	6	1	4277
1864-65	1663	1205	85	5	1	—	2959
1865-66	282	637	17	—	—	—	936
1866-67	1891	1502	66	4	12	—	3475
1867-68	1292	1161	75	15	2	—	2545

The place, now offered for sale, is the most famous of our Lincolnshire decoys.—*John Cordeaux; Great Cotes, Ulceby, July* 31, 1868.

Little Gull at Flamborough.—On the 13th of July a little gull, an adult in breeding plumage, with black head, was sent me, fresh, from Flamborough.—*J. H. Gurney, jun.; Bank, Darlington.*

Position of the Divers (Colymbi) *when on Land.*—The divers never come to land except in the breeding season, and then only the female. I am satisfied the male never goes ashore, but lives on the wing or on the water. The female but seeks land to deposit and hatch her eggs, which are laid quite close to the edge of the water; the young take to it on extrusion. As long as the bird has a beaten path to guide her, she can reach the water quickly; without such a guide she appears confused, though water may be close in sight. They can never take wing from the land, though freely from water. When unalarmed the female quietly works her body along the ground by aid of the feet; when alarmed the carpi act as fore feet, the true feet being brought forward along the sides of the body, and then being pressed outwards and backwards lever the body forward in a surprising manner; they can spring by this means ten feet; at an altitude of two feet the wings are of great aid. They never stand on their *toes* like many sea and all land fowl, nor on their *feet* like puffins, guillemots, &c., but always when on land lie on the breast and belly; the feet are not kept lying backwards under the tail, but before it, inclining outwards, the webs spread. I could never keep divers alive, they wearing the feet away in a night by vainly endeavouring to *swim* on the ground. They are fierce and sullen out of their true element, springing like a dog at one the height of a man's head, merely by aid of the feet. The anatomy of the feet is very beautiful, the texture most delicate: a glance at their organism will show their propulsive power on water, their total uselessness on land.—*H. Blake-Knox; Inverary, N.B., August* 5, 1868.

Blackthroated Diver.—In answer to Mr. Harvie Brown's query (Zool. S. S. 1320), I have frequently observed the blackthroated diver in its breeding haunts in Scotland, and have never seen it sitting or walking upright. The nests which I have seen have been placed within a foot of the water—a mere depression in the turf, with a few rushes very sparingly arranged over its surface, and generally two young. The nest being so close to the water, the bird just shuffles or slides on its stomach into the water, but I have not noticed its track very distinctly traced. The only time I have observed it upright was when on the water flapping its wings; while doing so it seemed to "tread water." It is a bird that is seldom seen on land. Concerning the great northern diver (Zool. S. S. 1309) I may mention that two of my correspondents have noticed this bird in two different localities in Scotland all through the summer, but I have not myself heard of its nest being found.—*Theodore C. Walker; Woodside, Leicester.*

Tortoises laying Eggs in Confinement.—A pair of tortoises were recently brought here from the island of Scilly. They have been kept in a garden ever since their arrival, and yesterday it was discovered that the female had laid an egg. Is there any instance on record of such in Britain? If not you are at liberty to make the announcement in your most valuable magazine, the 'Zoologist.' The egg is about the size of a bantam hen's, but rounder in shape, and to appearance the shell is like that sometimes extruded by hens prematurely, only quite hard.—*Mary Pine; Portsoy, Banffshire, N.B., August* 15, 1868.

[The circumstance of the box tortoise laying in confinement is very common in England.—*Edward Newman.*]

A regular Visitor.—With regard to the land turtle which is said to visit Mr. Smith's farm annually (Zool. S. S. 1321), the great probability is that it is constantly resident on the property, that it hybernates there, and makes its appearance about the same time every year as other land tortoises do.—*Thomas Bell; The Wakes, Selborne, Alton, Hants.*

"*Two Serpents and a Cat*" (Zool. S. S. 1343).—I had some years since two beautiful snakes from America, about eighteen inches in length, which I fed on frogs. On one occasion one of the snakes seized the frog by the hind leg, and the other by the head. Each continued to advance upon his proper portion of the poor frog, until the jaws of each invaded its rival's. One of them immediately commenced a violent shaking of the other and the frog, and thus after one or two efforts threw him off the prey, which he proceeded to swallow without further hindrance.—*Id.*

Lacerta viridis in the Rhine Valley.—Were any testimony required I could speak to the accuracy of Mr. Alston's wayside notes, as far as the Black Forest and Rhine Valley are concerned, as I was born and bred in the latter, and have trod many a weary foot in search of its natural productions. There is, however, one remark of Mr. Alston's which gives me the opportunity of pointing out a geographical fact in the history of the true green lizard (*Lacerta viridis*); I allude to his statement that he has never met with it in Germany (Zool. S. S. 1316). This beautiful reptile, it is well known, occurs throughout the South of Europe and also (perhaps imported) near Berlin; but, according to F. von Tschudi, it has not been found north of the St. Gothard in Switzerland. However, I have met with it abundantly, though locally, all along the southern heights of the Black Forest; for instance, on the Grenzacherberg (on Swiss ground), the Tüllingerberg, the Isteinerklotz, &c., heights surrounding the Rhine near Basle; but, singularly enough, I have never seen a specimen on the Jurassian Hills opposite, although it is said to occur there too. This lizard breeds in July and August in the loose rubbish-heaps shot out of the numerous quarries on the hills; but the eggs are mostly found in such stone heaps as are densely overgrown and of old date. It is a splendid sight to see a couple of these fine lizards, often full a foot in length, bask in the afternoon's sun, lying motionless and quite flat on some projecting ledge until disturbed by approaching footsteps, when off they are over "stock und stein" to some convenient hiding-place, not to show up again for a considerable time.—*Albert Müller; Penge, S.E., August 12, 1868.*

Shells seen or collected, early in June, during a Four-days' Walk in Lancashire and Craven. By GEORGE ROBERTS, Esq.

THE following list would probably have been more extended had the weather been more favourable for shell-hunting. Land-shells, owing to the unusual dryness of the weather, were then, as they have been through summer, exceedingly difficult to find.

Cyclas cornea.
Pisidium fontinale, *var.* 4-cinerea. Near Morecombe.
Bithinia tentaculata.
Zonites crystallinus.
Helix aspersa. Very few abroad.

H. Arbustorum. Near Hornby, and other places. A conical variety.

H. nemoralis. Only seen in two places. Appears to be less common than H. Arbustorum.

H. virgata. Dead shells in an old quarry. Craven.

H. Ericetorum. Only in one spot; dead.

H. rufescens.

H. hispida.

H. rotundata. Common with H. rufescens, about the foot of Ingleboro'. Nearly all the Helices were found attached to plants, with closed mouths.

H. umbilicata. On the top of a grit-stone wall near Ingleboro'.

Bulimus obscurus. On mossy walls and rocks on the limestone. More common than expected.

Pupa umbilicata. Common.

Clausilia nigricans. Some very dark specimens.

Zua lubrica.

Succinia putris. Nearly on the top of Ingleboro'. Common in other places.

Physa fontinalis. Poulton-le-Fylde. One large specimen.

Planorbis nautileus. Poulton-le-Fylde. On water plantain.

P. marginatus. Near Morecombe.

P. spirorbis. Near Morecombe. When I and my friend who was with me (Mr. Willis, of Wakefield) were hunting, net in hand, over a pond here, some boys approached, and with earnest looks and open mouths wondered what we were going to do with the "tiny little things" we had in our boxes. One, more prompt than the rest, settled it that they were to fish with.

P. contortus. Morecombe. I have found P. contortus near Selby and near Bridlington; I therefore infer that it occurs, but perhaps sparingly, right across the country from the east coast to the west. The soil at Morecombe rests on new red sandstone, at Selby the same, and at Bridlington on chalk. I may just observe here that when I was looking about for shells on the east coast last spring, on the chalk, I found Helix virgata and H. cantiana the commonest of all, the latter being far more common than either H. nemoralis or H. Arbustorum.

Limnæus pereger. Common. A small variety with a longish spire near Ingleboro'.

L. auricularius. In a deep ditch at Poulton-le-Fylde, in Lancashire, along with Limnæus palustris, Physa fontinalis and Cyclas cornea.

L. truncatulus. Nearly at the top of Ingleboro'.

L. palustris. Poulton-le-Fylde.

Ancylus fluviatilis. On Ingleboro', with Succinia putris and Limnæus truncatulus.

The Canadian weed (*Anacharis alsinastrum*) seems to be a favourite with aquatic mollusks: I have almost always found some of the genus Planorbis on it. In our journey we never met with this plant. I seldom find shells on the broad pond-weed (*Potamogeton natans*), though it is one of the commonest pond-plants. I lately examined a pond which was full of broad pond-weed, and all I found was Limnæus pereger: the plant was in flower, and the surface of the pond was covered with bees and flies, some creeping on the floating leaves, some at the flowers—a rather curious sight.

GEORGE ROBERTS.

Lofthouse, near Wakefield.

Rare Butterflies.—I think it may interest the readers of the 'Zoologist' to know that, during a month's sojourn at Dover, I and my boy have been very successful in our entomological captures. The beautiful Colias Edusa we met with frequently, and many was the hard chase we had after this brilliant insect; indeed I never thought a butterfly could fly so fast and so far as they did, and often they beat our best efforts, but we nevertheless captured a few pairs. Our chief interest, however, was excited by the abundance of that rarer insect, C. Hyale, and its still more uncommon relative C. Helice, and we captured a number of each; in fact, we frequently saw as many as twenty in a morning's ramble, but like C. Edusa they led us many a race up and down hill, and during the late intensely hot weather this was no joke, and we were not unfrequently compelled to acknowledge ourselves beaten. All these three species we found most plentiful on clover or sain-foin stubbles that had been mown or eaten off by sheep. Few to our surprise frequented the clover in flower, of which there was plenty. So partial were they to this clover-stubble that on sunny days we were always sure of meeting with them in two fields especially, about half a mile out of Dover on the Deal side. In one of these fields, at the back of Dover Castle, a much rarer capture we saw made by a young gentleman, being no other than the Bath White (*Pieris Daplidice*), a fine female insect and a good specimen. It does not often fall to the entomologist's lot either to see this rare butterfly or to capture it, and we gazed on it with delight: it was taken on the 11th of August, and I think its occurrence is worth recording. We found the Grayling (*Hipparchia Semele*) plentiful on one spot of cliff near the "Zig-zag" at the coast-guard station. The Chalk-hill Blue (*Polyommatus Corydon*) covered the Downs in thousands. We also took P. Argiolus, P. Alsus and P. Ægon.—*W. J. Sterland; Grove Road, Colney*

Hatch Park, August 19, 1868. [Colias Helice of Haworth is a variety of the female of C. Edusa.—*Edward Newman.*]

Colias Edusa, var. *Helice, near Ipswich.*—Seeing the following letter in the 'Ipswich Journal' I inclose a copy of it, thinking the readers of the 'Zoologist' may like to see it:—

"A RARE BUTTERFLY.—Some of your entomological readers may be glad to know that a butterfly, very rare in these parts, and I believe never found here except in unusually hot seasons, may now be commonly seen in certain localities, *viz.* Colias Helice, one of the Clouded Yellows. I have caught ten specimens in Melton, and on Friday last saw several on Aldeburgh Common. Mr. Hele has also caught them at Aldeburgh, and my sister at Westleton. Every one I have seen, who has noticed these insects, has described them as Colias Hyale, which I take to be quite a separate species; and though C. Helice is thought by many entomologists to be only a variety of C. Edusa, surely being now found in such plenty proves it to be, as a few suppose, distinct.—*Fredk. Spalding; Woodbridge, August* 20, 1868."

Mr. Spalding does not say he has taken C. Edusa this year, so I conclude he has not done so. Thus, supposing the insects he has taken to be a variety of C. Edusa, I think it would be almost impossible to take them in such numbers. Of course varieties are rarer than the others. Colias Edusa was pretty common here last year; and I took several, but only saw one variety taken.—*Edward F. Bisshopp; 36, High Street, Ipswich, August* 25, 1868.

[I should have liked more information on this subject, particularly as to the question raised by Mr. Bisshopp, whether Mr. Spalding has taken Colias Edusa? The paragraph quoted does not imply that Helice and Edusa were on the wing together; and it would be a very remarkable thing if this were *not* the case. I have not heard of there ever having been seen anything like a company of Helice, observed apart from Edusa. I cannot suppose it a species, since it has no male, and has, moreover, been so frequently taken *in coitu* with male Edusa.—*Edward Newman.*]

Vanessa Antiopa at Chatteris.—My son caught, on the 6th of August, a very fine specimen of the Camberwell Beauty (*Vanessa Antiopa*): it was hovering over a flower-bed in the garden, and was taken in perfect condition. Am I right in assuming that this beautiful butterfly has not been seen in England for many years? Is it possible that the recent great and continuous heat has induced some of these insects to cross the Channel, and take up their abode here? This idea is rather confirmed by the fact that several fine specimens of the Pale Clouded Yellow (*Colias Hyale*) have been taken here within the last week; this latter butterfly being also one very rarely seen on the wing in this country.—*John Fryer; Manor House, Chatteris, Cambridgeshire.* [Many specimens of Vanessa Antiopa have been taken in England within the last ten years, but always singly, and generally inland: there are no attendant circumstances that would at all justify the conclusion that they come from over sea, although there is nothing in the distance between the Kentish and the French coast that would render the transit difficult.—*Ed.*]—*From the 'Field.'*

Deilephila Livornica at Truro.—On the 2nd of August I had the good luck to take a specimen of Deilephila Livornica, in a garden near here. As it is one of the rarest of our British moths, it may be interesting to your entomological readers to hear of its capture.—*Id.*

29 SE 68

CONTENTS.

The Death of Species, *Edward Newman*, 1345.

On the Habits of a Tipulidous Larva, 1358.

Remarks on the Birds of Ailsa Craig, *Theodore C. Walker*, 1365.

SUCKLERS.—Bos scoticus, *Theodore C. Walker*, 1373. Malabar Superstition respecting the Liver of the Tiger, *J. H. Gurney*, 1374.

BIRDS.—Honey Buzzard at Yarm, *William Lister, jun.*, 1374. Note on Montagu's Harriers, old and young, obtained in Cornwall, *Edward Hearle Rodd*, 1374. Snowy Owls in Shetland, *J. H. Gurney, jun.*, 1374. Sedge Warbler in Dry Places, *Rev. H. Harpur Crewe, M.A.*, 1374. English Sparrows in America, *Edward Sweetapple*, 1375. Common Crossbill in Surrey, 1376. Whitewinged Crossbill in the County Dublin, *Harry Blake-Knox, J.P.*, 1376. Crossbill at Wingham, *W. Oxenden Hammond*, 1376. Common Crossbill in Cornwall, *Edward H. Rodd*, 1376. Migration of Crossbills, 1377. Crossbills in Ireland in 1868, *Harry Blake-Knox*, 1377. Rosecoloured Pastor near Yarmouth, 1377. Roller near Carlisle, 1378. Scarcity of Hirundines; Three Species of Columbidæ breeding at Selborne, *T. Bell, F.R.S.*, 1378. Land's End Waders, *Edward Hearle Rodd*, 1378. Bitterns in Ireland, *H. Blake-Knox*, 1378. Lesser Tern in Devonshire; Black Tern in Somersetshire, *Cecil Smith*, 1378. The Ashby Decoy, *John Cordeaux*, 1378. Little Gull at Flamborough, *J. H. Gurney, jun.*, 1379. Position of the Divers when on Land, *H. Blake-Knox*, 1379. Blackthroated Diver, *Theodore C. Walker*, 1380.

REPTILES.—Tortoises laying Eggs in Confinement, *Mary Pine*, 1380. A regular visitor; "Two Serpents and a Cat," *T. Bell, F.R.S.*, 1380, 1381. Lacerta viridis in the Rhine Valley, *Albert Müller*, 1381.

MOLLUSKS.—Shells seen or collected, early in June, during a Four-days' Walk in Lancashire and Craven, *George Roberts*, 1381.

INSECTS.—Rare Butterflies, *W. J. Sterland*, 1383. Colias Edusa, *var.* Helice, near Ipswich, *Edward F. Bisshopp*, 1384. Vanessa Antiopa at Chatteris, 1384. Deilephila Livornica at Truro, 1384.

THE LETTERS OF RUSTICUS ON NATURAL HISTORY.

"There is a wood-cut, some of them most exquisite, to each chapter, and tail-pieces, after the delightful manner of Bewick, are scattered through the work. It is a most delightful book."—*Douglas Jerrold.*

"The most charming contribution to Natural History since the days of good old Gilbert White. These Letters are well worthy of consultation by all gardeners and agriculturists, since the descriptions of these facts are perfectly trustworthy, being in all cases the result of observation."—*Westminster Review.*

"The collection of facts and observations respecting blights, or insects injurious to vegetation, are especially worthy attention, and we recommend them strongly."—*Gardeners' and Farmers' Journal.*

Price Eight Shillings and Sixpence, post free.

John Van Voorst, 1, Paternoster Row.

Exhibition Prize Medal, 1862.—Established at West End 1825.

G. B. ASHMEAD (successor to the late J. ARGENT), NATURALIST, &c., 32, Bishopsgate Street Without. Choice Drawing-Room Groups under Glass-shades. British and Foreign Bird Skins and Eggs. British and Exotic Lepidoptera. Cabinets for Insects, Eggs, Coins, &c. Nets, Store-boxes, Pins and other Entomological Apparatus. Choice and Ornamental Shells. Plumes for Hats. Skins dressed for Rugs. Horns mounted on Shields for Halls.

LONDON: EDWARD NEWMAN, PRINTER, 9, DEVONSHIRE STREET, BISHOPSGATE, N.E.